

result is a valuable contribution to the morphology of the Laminariaceae. The distribution and habitat are also presented in full, as well as an interesting account of the economic use of the genus. More than 32 species have been described since the genus was established in 1830, but the author recognizes only 15. The uncertainty of specific limitations has been due to the fact that the describer has not observed the stages of development or the effects of different habitats, so that different forms of one species have been described as distinct species. The author has studied *Alaria* in its habitats throughout the northern Pacific from Vancouver Island to Japan, and the result is a reorganized presentation of the genus, only one new species being recognized (*A. ochotensis*), but a number of old "species" disappearing as stages or habitat forms of other species.—J. M. C.

Cones of Williamsonia.—The organization of the cones of *Williamsonia gigas* has been a "palaeobotanical puzzle" ever since the original description in 1849. Since that date it is said that approximately 100 memoirs have discussed this subject. The late E. A. NEWELL ARBER¹⁰ left a brief paper summing up the difficulties, and suggesting conclusions. The difficulties presented are 4 in number: (1) were the cones monosporangiate or bisporangiate? (2) where were the microsporophylls attached? (3) what structure was borne on the axis of the cone above the megasporophylls? (4) was there an infundibular expansion, similar in form to the united whorl of microsporophylls, but sterile, and where was it attached?

The answers given are as follows: (1) the cones were probably monosporangiate; (2) the ovulate cone bore only seeds and interseminal scales on a conical axis; (3) the staminate cone had an urn-shaped axis, sheathed below, which bore apically a whorl of partly united microsporophylls and no interseminal scales; (4) there is no evidence of any sterile infundibular organ attached to or terminating either cone.—J. M. C.

Zingiberaceae of Java.—In 1904 VALETON¹¹ published an account of the Zingiberaceae of Java. This account he has now supplemented¹² by further investigation during the last 15 years. The present extensive paper is only the first part, dealing chiefly with *Curcuma*, *Gastrochilus*, *Kaempferia*, and *Zingiber*. There is a very full discussion of the characters of the family, and each species is presented in great detail. The 4 genera referred to are represented as follows: *Curcuma*, 21 spp. (10 new); *Gastrochilus*, 16 spp. (5 new); *Kaempferia*, 4 spp.; *Zingiber*, 17 spp. (5 new).—J. M. C.

¹⁰ ARBER, E. A. NEWELL, Remarks on the organization of the cones of *Williamsonia gigas*. Ann. Botany 33:173-179. figs. 5. 1919.

¹¹ Bull. Inst. Bot. Buitenzorg. no. 20. 1904.

¹² VALETON, TH., New notes on the Zingiberaceae of Java and Malaya. Bull. Jard. Bot. Buitenzorg. no. 27. pp. 168. pls. 30. 1918.